

AMENDMENTS TO CLAIMS

Cancel claims 1-14.

15. (Amended) A channel director comprising:
multiple [ESCON] channel input and output ports;
a switch matrix for connecting the [ESCON] channel ports; and
a multiple interface facility device comprising:
a multiplexer module for converting at least four [ESCON] channel output ports to a single output data stream on an output fiber optic data link; and
a demultiplexer module for converting a single input data stream on an input fiber optic data link to at least four [ESCON] channel input ports.
16. (Amended) The channel director of Claim 15 wherein the multiplexer module comprises:
a first multiplexer for multiplexing at least two of the [ESCON] channel output ports into a first intermediate output stream;
a second multiplexer for multiplexing at least two other of the [ESCON] channel output ports into a second intermediate output stream;
a serializing transmitter coupled to the first and second multiplexers for serializing the first and second intermediate output streams into the single output data stream.
17. (Amended) The channel director of Claim 16 wherein the multiplexer module further comprises a signal for synchronizing the serializing of the first and second intermediate output streams and tagging output data in the single output data stream as corresponding with data from each of the respective [ESCON] channel output ports.
18. (Original) The channel director of Claim 17 wherein the multiplexer module further comprises an optical transmitter for transmitting the single output data stream onto the output fiber optic data link.

19. (Amended) The channel director of Claim 15 wherein the demultiplexer module comprises:
- a receiver for de-serializing the input data stream into first and second intermediate parallel data streams;
 - a first demultiplexer for demultiplexing the first intermediate parallel data stream into two parallel data streams on two respective [ESCON] channel input ports;
 - a second demultiplexer for demultiplexing the second intermediate parallel data stream into two other parallel data streams on two other [ESCON] channel input ports.
20. (Amended) The channel director of Claim 19 wherein the demultiplexer module further comprises a signal for synchronizing the de-serializing of the first and second intermediate output streams and tagging data in the input data stream as corresponding to data in each of the respective [ESCON] channel input ports.
21. (Original) The channel director of Claim 20 wherein the demultiplexer module further comprises an optical receiver for receiving the input data stream from the input fiber optic data link.
22. (Amended) A multiple interface facility device adapted for use the [ESCON] channel ports, the device comprising:
- a multiplexer module for converting at least four [ESCON] channel output ports to a single output data stream on an output fiber optic data link; and
 - a demultiplexer module for converting a single input data stream on an input fiber optic data link to at least four [ESCON] channel input ports.
23. (Amended) The multiple interface device of Claim 22 wherein the multiplexer module comprises:
- a first multiplexer for multiplexing at least two of the [ESCON] channel output ports into a first intermediate output stream;

a second multiplexer for multiplexing at least two other of the [ESCON] channel output ports into a second intermediate output stream;
a serializing transmitter coupled to the first and second multiplexers for serializing the first and second intermediate output streams into the single output data stream.

24. (Amended) The multiple interface device of Claim 23 wherein the multiplexer module further comprises a signal for synchronizing the serializing of the first and second intermediate output streams and tagging output data in the single output data stream as corresponding with data from each of the respective [ESCON] channel output ports.
25. (Original) The multiple interface device of Claim 24 wherein the multiplexer module further comprises an optical transmitter for transmitting the single output data stream onto the output fiber optic data link.
26. (Amended) The multiple interface device of Claim 22 wherein the demultiplexer module comprises:
- a receiver for de-serializing the input data stream into first and second intermediate parallel data streams;
 - a first demultiplexer for demultiplexing the first intermediate parallel data stream into two parallel data streams on two respective [ESCON] channel input ports;
 - a second demultiplexer for demultiplexing the second intermediate parallel data stream into two other parallel data streams on two other [ESCON] channel input ports.
27. (Amended) The multiple interface device of Claim 26 wherein the demultiplexer module further comprises a signal for synchronizing the de-serializing of the first and second intermediate output streams and tagging data in the input data stream as corresponding to data in each of the respective [ESCON] channel input ports.

28. (Original) The multiple interface device of Claim 27 wherein the demultiplexer module further comprises an optical receiver for receiving the input data stream from the input fiber optic data link.
29. (Amended) A system comprising:
a fiber optic data link;
a channel director at a first location, the channel director comprising multiple [ESCON] channel input and output ports, a switch matrix for connecting the [ESCON] channel ports and a multiplexer module for converting at least four [ESCON] channel output ports to a serial data stream on one end of the fiber optic data link; and
a demultiplexer module at a second location, the demultiplexer module coupled to the other end of the fiber optic data link for receiving the serial data stream and converting the serial data stream to at least four [ESCON] channel input ports.
30. (Amended) The system of Claim 29 further comprising a second fiber optic data link and a second multiplexer module at the second location for converting at least four [ESCON] channel output ports to a second serial data stream on one end of the second fiber optic data link and wherein the channel director further comprises a second demultiplexer module at the first location, the second demultiplexer module coupled to the other end of the second fiber optic data link for receiving the second serial data stream and converting the second serial data stream to at least four [ESCON] channel input ports.
31. (New) A multiplexer comprising:
a. a plurality of first multiplexing stages, each first stage
i. receiving two distinct parallel inputs, and
ii. selectively presenting one of the two parallel inputs as a first stage parallel output; and
b. a single second multiplexing stage, the second stage receiving as inputs
i. all of the first stage parallel outputs, and
ii. a binary indicator as to which of the two parallel inputs are being presented by the first stages as first stage parallel outputs,

- the second stage operating as a parallel to serial converter to create a second stage serial output.
32. (New) The multiplexer of claim 31, wherein the first stage alternates between the two distinct parallel inputs according to a time tag, the time tag also serving as the binary indicator.
33. (New) The multiplexer of claim 31, wherein the second stage further receives input control bits that are to be embedded within the second stage serial output.
34. (New) The multiplexer of claim 31, wherein the second multiplexing stage is able to invert the first stage parallel outputs when placed on the second stage serial output.
35. (New) The multiplexer of claim 34, wherein the second stage serial output includes control bits containing both the binary indicator and an indicator as to whether the first stage parallel outputs are inverted.
36. (New) The multiplexer of claim 31, further comprising:
- c. a first demultiplexing stage operating as a serial to parallel converter to convert a serial input into a first demultiplexing stage parallel output and a binary demultiplexing indicator; and
 - d. a plurality of second demultiplexing stages, each second demultiplexing stage having two distinct parallel outputs and selectively presenting a portion of the first demultiplexing stage parallel output to one of the two distinct parallel outputs under the control of the demultiplexing binary indicator.
37. (New) A multiplexing system comprising:
- a. a plurality of first multiplexing stages, each first multiplexing stage
 - i. receiving a plurality of distinct parallel inputs, and
 - ii. selectively presenting one of the plurality of parallel inputs as a first multiplexing stage parallel output according to a time tag;
 - b. a single second multiplexing stage, the second multiplexing stage receiving as inputs
 - i. all of the first stage parallel outputs, and
 - ii. the time tag,the second multiplexing stage operating as a parallel to serial converter to create a second stage serial output;

- c. a serial data link for transmitting the second stage serial output;
 - d. a first demultiplexing stage receiving the second stage serial output over the serial data link, the first demultiplexing stage operating as a serial to parallel converter to convert the second stage serial output into a first demultiplexing stage parallel output and the time tag; and
 - e. a plurality of second demultiplexing stages, each second demultiplexing stage having a plurality of second multiplexing stage parallel outputs and selectively presenting a portion of the first demultiplexing stage parallel output to one of the plurality of second multiplexing stage parallel outputs under the control of the time tag.
38. (New) The multiplexer system of claim 37, wherein the second multiplexing stage inverts the first multiplexing stage parallel outputs when placed on the second stage serial output.
39. (New) The multiplexer of claim 38, wherein the second stage serial output includes control bits containing both the time tag and an indicator as to whether the first multiplexing stage parallel outputs are inverted.
40. (New) A channel director providing switching between channels comprising:
- a. a switching matrix for establishing switching connections between the channels;
 - b. a port adapter interfacing between a plurality of ports and the switching matrix;
 - c. a multiple interface facility interfacing between the switching matrix and a serial data link, the multiple interface facility having
 - i. a plurality of first multiplexing stages, each first multiplexing stage receiving a plurality of distinct parallel inputs from the switching matrix, and selectively presenting one of the plurality of parallel inputs as a first multiplexing stage parallel output according to a time tag;
 - ii. a single second multiplexing stage, the second multiplexing stage receiving as inputs all of the first multiplexing stage parallel outputs and the time tag, the second multiplexing stage operating as a parallel to serial converter to create a second stage serial output on the serial data link.

41. (New) The channel director of claim 40, wherein the multiple interface facility further includes:
- iii. a first demultiplexing stage receiving a serial input over the serial data link, the first demultiplexing stage operating as a serial to parallel converter to convert the serial input into a first demultiplexing stage parallel output and the time tag; and
 - iv. a plurality of second demultiplexing stages, each second demultiplexing stage having a plurality of distinct parallel outputs to the switching matrix and selectively presenting a portion of the first demultiplexing stage parallel output to one of the plurality of distinct parallel outputs under the control of the time tag.